DNA Studies: Facts, Data Manipulation and Limitations

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The politicization of DNA ancestry studies or data by certain national groups has led to the publication and dissemination of numerous claims and misinformation on various social media forums; therefore, it was important at this stage to shed some light on DNA facts, data manipulation, misinformation and limitations regarding DNA ancestry studies.

Introduction

Before we proceed, it is important to briefly define few basic terminologies. The deoxyribonucleic acid (DNA) is organic chemical of complex molecular structure that is found in all prokaryotic, eukaryotic cells and in many viruses. Humans have 23 pairs of chromosomes that are made of long strands of DNA, which contain all the body's genes. We have 22 pairs that are called autosomes, which can be used in ancestry purposes via the Autosomal DNA test. The 23rd pair is called the sex or allosome chromosome, which includes the Y-chromosome (Y-DNA) and the mitochondrial (mtDNA).

There are mainly three types of DNA tests on the market today: Y-chromosome (Y-DNA), mitochondrial (mtDNA), and Autosomal. Each test produces different information. Only males have the Y chromosome, with which we can only trace back our paternal line. Meanwhile, the mitochondrial DNA is handed down from mother to child, so it can only tell us about our maternal ancestors. The Y-DNA and mtDNA can tell if you and I share the same relative from tens of thousands of years ago. Thus, Y-DNA and mtDNA are good for answering questions about ancestry; however, they have some limitations. Meanwhile, reliable data from Autosomal tests could typically be useful going back six generations.

Haplogroups are genetic classifications or ancestral groupings within a population, typically defined by shared, inherited genetic markers or mutations. A haplogroup represents a tiny branch on the human genetic tree. These branches help scientists map the genetic lineage of populations across different geographic regions. A haplogroup is the convenient combination of the two terms haplotype and group. Since a haplogroup is a lineage, one can, for example, be Indian with Irish paternal lineage, or Australian Aboriginal person with Persian mtDNA. **If that lineage from somewhere around the world occurred beyond seven or eight generations back, there will a large possibility of finding no trace in the autosomal DNA results; however, it will be a haplogroup lineage.**

Furthermore, we must also understand that mistakes do happen in DNA as it is being copied inside our bodies. These mistakes are known as mutations, which are handed down to future generations. The easiest way to understand mutations is to read the simple analogy by Principle Bioinformatics Scientist Fiona Tamburini.

Also, “race” and “ethnicity” have been used interchangeably in the media and government organizations—which is incorrect sociologically speaking. The genetic ambiguity between what is known as races far outweighs any clustering of genes capable of defining a particular race,[1] because race specifically is hundred percent non-genetic and non-biological. There are many sources on this reality.[2] Humans share over ninety-nine percent of their genetic material, and most variation (up to ninety percent) occurs within a population rather than between them. Worldwide, all physical variations occur within 0.1% of the human genome, according to the Human Genome Project completed in 2000.[3]

Lastly, but not least, I must stress that biological scientists agree that we cannot rely completely and strictly on DNA to determine a person's ethnicity and ancestry. Yes, everyone has ancestry, whether easily identifiable or not is not determined by genetics alone. Did our ancestors, or to keep it simpler even our grandparents knew about the field of human genetics? No. Our grandparents' ancestry was based on assumed/presumed or perhaps taught ancestry; it was not confirmed via genetic testing. Yes, most of us have genetic ancestry similar to some ancient people, but that's not everyone, and it's never entirely the case. **Precise determination of ancestry must be accompanied by understanding of historical documentation, archeological findings, studies of ancestry based on country, language, cultural continuity and pedigree information**. This is true since genetic studies on ancient remains are still performed on a modicum of samples, but the more analyzed samples the higher-resolution picture they can create about how individuals and populations evolved over time. Moreover, decoding DNA is only one chapter in a person’s history. Ancestry is a legacy, not a bloodline. Our genetic script may be one of the most valuable things we possess, but, again, it’s never the whole story.

Facts

What makes an Assyrian (Chaldean, Nestorian or Jacobite) different from let’s say a Kurd? The answer is many factors that are not there by accident. They are there because **the Assyrians and the Kurds originated at two completely different periods in history, lived in different regions, developed different occupations, spoke completely different languages (Semitic in the case of the Assyrians and Iranian base Indo-European in the case of the Kurds), had different customs and traditions.** Prof. Samir Johna explains, “*people of different ethnicities may live in the same geographical area for generations, yet we can still identify some elements in culture that separates them as people. A case in point is a form of poetry among Assyrian mountaineers from Hakkari, modern day Türkiye, called “Raweh”. This poetry is unique to Assyrians and is not known among the Kurds despite living in the same geographical area for centuries.*

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[1] Accessed 11/22/2024. https://www.the-scientist.com/does-our-dna-make-us-all-unique-or-all-the-same--66307

[2] Accessed 1/27/2025. Race is Real, But it’s Not Genetic. https://www.sapiens.org/biology/is-race-real/

[3] Adrianne L. Spunaugle. Empire and Ethnicity: A Social History of Deportation in Assyria and Karduniaš during the First Millennium BCE. University of Michigan, 2020. Page 23.

In comparison, the Japanese have a similar form of poetry known as Haiku despite the vast geographical distances between Japan and Hakkari."[4] Assyrian traditions include also singing what is called Lillianeh, a set of festive songs that start with an engagement until the wedding day. Another tradition involves preserving religious customs such as the *Rogation of the Ninevites* among others.[5]

Of course, migration applies to a large extent to the overwhelming majority of the people. All populations probably moved from one place to another at some point, most did so many times. The Assyrians and Kurds ended up being neighbors in modern Turkiye, Iran, Iraq and Syria due to uninterrupted Kurdish incursions into Assyrian historic lands of northern Mesopotamia (Assyria). Still, the concept of "umma" or "the community", which defines people bounded by their religion, created permanently segregated communities between Muslims and non-Muslims. It was this structure that left contacts very limited between the Muslim community of the Arabs, Kurds, Persians, and Turks from one end and the Christian community of the Assyrians and Armenians from the other end, which kept the Armenians and Assyrians unassimilated.[6] This also applies to the Yezidi and Mandean communities in Iraq who remained segregated.

Early documented history tells us about civilizations that began to develop in Sumer some 7000 years ago. Soon after, the first empire in the world was established by the Akkadians from which emerged the Babylonians in southern Mesopotamia and the Assyrians in northern Mesopotamia. Thus, it is reasonable to claim that there are undeniable links between these indigenous Akkadians, Assyrians and Babylonians of Mesopotamia. Of course, we must emphasize that other groups in the region whose roots go back to the Bronze Age had their own influence on these groups. Consider the Hurrians (with their powerful Mitanni kingdom) who existed from central Mesopotamia to the region of Tur 'Abdin in northern Mesopotamia, and who spoke neither Sumerian nor Akkadian and the Amorites of southern Mesopotamia who ruled certain parts of the region for a period of time.[7]

The Assyrians and Babylonians spoke Akkadian and used Cuneiform script for writing. However, around the 9th Century BC, Aramaic slowly began to infiltrate the Assyrian Empire and the Aramaic alphabet in time became officially used.[8] This Aramaic adaptation applied on the Babylonians (and their descendants) as well. The Greeks and the West had used the term Syriac[9] for the language of early Assyrian Christianity in Edessa (Urhai or Urfa) instead of Aramaic that spread in the region because of the

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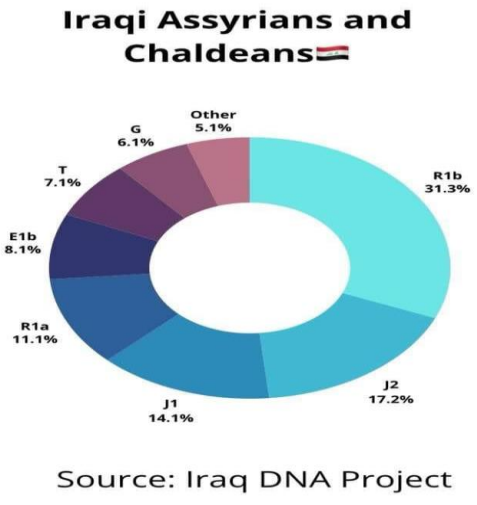
[4] Dr. Samir Johna. Raweh d'Awahathan Taweh. In Assyrian. Amazon. 2024. The unofficial translation for the book title is "Our Benevolent Forefathers' Chanted Poems".
[5] Aprim, Frederick. Assyrians: The Continuous Saga. Xlibris Corporation. 2004.
[6] Sweet, Louise E. Peoples and Cultures of the Middle East. Vol. I: Cultural Depth and Diversity. New York: The Natural History Press, 1970.
[7] H.W.F. Saggs. The Might That Was Assyria. Sidgwick and Jackson Limited, 1984.
[8] Dr. William Piroyan, a historian, describes the different stages of development of the Assyrian language and says that Assyrians basically shifted from cuneiform script to the alphabet which he calls Assyrian too.
[9] The Assyrians called that language Surith, a term that is a linguistic form of Suraya and Ashuraya (Assyrian).

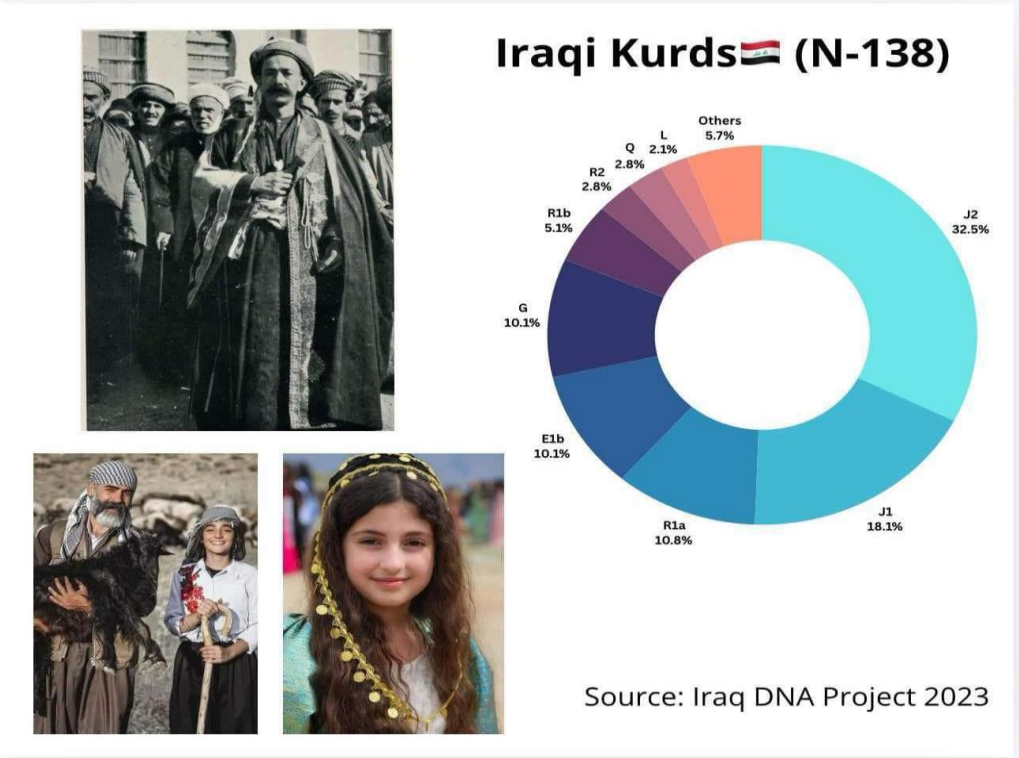
Assyrian domination of the Near East region, but this artificial word, i.e. Syriac, was not used in the East or by the Assyrians themselves.

Romans and Greeks did invade Mesopotamia and were around for a hundred or two hundred years. These people have their own languages and heritage, but we do not see any change in the language of the indigenous Assyrians who continued to live in northern Mesopotamia. Some of these Greeks and Romans might have assimilated in the population of Mesopotamia, some could have married Assyrians or Babylonians and assimilated into the native population while their armies moved on after appointing a ruler. The same could apply with the Persians, whether Achaemenids, Parthians or Sassanid. This narrative is reasonable to accept, because history and archeology substantiate it. However, in general, these invading groups as a collective people did not remain in Mesopotamia with the exception of the Arabs in the 7th Century, some Seljuk Turkic tribes from the 11th Century into Anatolia and the Ottomans from the 14th Century into the modern Iraq and other regions in the Near East, Arabia, Africa and Europe.

The Iraq DNA Project data were published recently by Nadia al Zahery. The data was analyzed and their charts below were extracted by Malak Muhammad. The Assyrians and Kurds have two different ancestries. The Assyrians' autosomal DNA and haplogroup data suggests a direct trace to Iron Age Assyrians, a mix of mainly Bronze Age Mesopotamian and Bronze Age South Caucasus. Meanwhile, the Kurds genetic data suggest their link to Northwestern-Iranians, a mix of West Asian (Zagrosian) and Iron Age South Asia Iranic origin (BMAC). Both groups have different paternal & maternal origins, however both groups' ancestries are from the Near East, the Assyrians from Mesopotamia and the Kurds from the Iranian plateau. The R1b-Z2103 Y-chromosome lineage peaks among Assyrians and few other groups, such as Armenians, as the studies have shown.[10] Certain Kurdish clans was acquired from a common ancestor of Transcaucasia, rather than direct relations between the two groups. Meanwhile, the R1a is perhaps due to the spread of Iranic groups.



[10] Accessed 1/26/2025 https://www.yfull.com/tree/R-Z2103/



Analysis of the genetic makeup of the Assyrians shows that they have a distinct profile that distinguishes their population from others. A particular study and analysis by Akbari et al states, "*the Assyrians are a fairly homogeneous group of people, believed to originate from the land of old Assyria in northern Iraq," and "they are Christians and are possibly bona fide descendants of their namesakes.*" The main research paper on Assyrians by Akbari et al. state, "*that the Assyrians are a group of Christians with a long history in the Middle East. From historical and archeological evidence, it is thought that their ancestors formed part of the Mesopotamian civilization.*" Akbari et al.[11] examined some five hundred members of Christian communities in Iran (Armenians and Assyrians from six localities) from whom specimens were obtained and examined for a number of blood groups, red cell enzymes and serum protein systems. In the case of Assyrians, the researchers studied eighteen different gene sites with a total of forty-seven different forms of those genes (alleles) in Assyrians in two regions of Iran - Urmia and Tehran. The particular gene frequencies of those forty-seven genes in the population formed the basis, along with the other two studies[12], for establishing the distinctive genetic character of the Assyrians.

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[11] Akbari, M.T. et al. Genetic Differentiation among Iranian Christian Communities. Am. J. Hum. Genetics, 38: 84-98. 1986. [Armenians and Assyrians].

[12] • Papiha, S.S. et al. Isoelectric focusing of vitamin D binding protein (Gc): Genetic diversity in the population of Iran. Jpn. J. Hum. Genet., 30: 69-73. 1985.

• Amin-Zaki, L. et al. Glucose-6-phosphate dehydrogenase deficiency among ethnic groups in Iraq. Bull. WHO, 47:1-5. 1972.

A major finding of the study is that Assyrians, especially those in Urmia (their home area in Iran), are genetically homogeneous to a high degree. That is, an individual Assyrian's genetic makeup is relatively close to that of the Assyrian population as a whole. "*The results indicate the relatively closed nature of the [Assyrian] community as a whole*," and "*due to their religious and cultural traditions, there has been little intermixture with other populations.*" The small size of the population is also a factor,[13] which is supported by written and oral history. Citing Cavalli-Sforza et al, Professor Joel Elias writes that "*the genetic origin of groups that have been surrounded for a long time by populations of different genetic type can be recognized as different only if they have maintained a fairly endogamy [marriage within the group] for most or all the period in which they have been in contact with other groups".* Elias stresses: "*the data provide unequivocal evidence that Assyrians as a people are distinguishable from all other population groups in their genetic characteristics and are not a part of any other population*".[14]

A recent DNA study has shown that the 2100-year-old Kushan sample from Tajikistan, and the 390-year-old sample from Ganj Dareh, Iran have an almost one-hundred percent Kurd genetic composition.[15] Data clearly indicate that from about 2500 years ago to around four hundred to one thousand years ago, Anatolia was inhabited by people who significantly resembled Armenians to the exclusion of Kurds and Turks on a DNA basis. The genetic analyses are thus consistent with an en masse migration of Kurds into Anatolia from Iran over the last five hundred years, during the Ottoman occupation of Anatolia.[16]

In a very important study, data showed that Iranics such as Kurds and Persians are genetically shifted to the north and east of Armenia, more precisely, Central Asia and the Caucasus, and thus the homeland of a substantial proportion of Kurds and Persians ancestors is the Parthia Central Asia region … With a glance at the data, it is immediately apparent that Europeans, Siberians, Central and South Asians share significant ancestry with Kurds more than other ethnic groups such as the Armenians.

The data also showed that some local West Asians and Southern Europeans such as Georgians, Iraqi Jews and Greeks share more ancestry with people such as Armenians than with Kurds. Some of this is probably an artifact of greater shared Neolithic Anatolian Farmer ancestry with Armenians to the exclusion of Kurds.[17]

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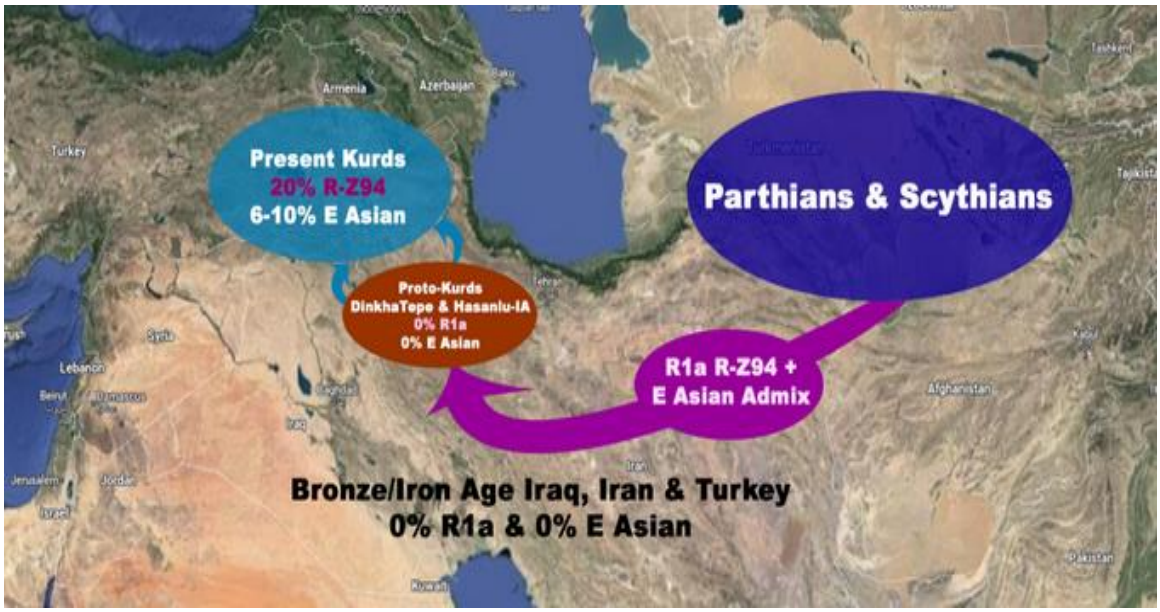
[13] Cavalli-Sforza, L.L., Menozzi, P. and Piazza, A. The History and Geography of Human Genes. 1994. Princeton University Press. Unabridged Edition. In https://www.atour.com/health/docs/20000720a.html

[14] Elias, Joel J. The Genetics of Modern Assyrians and Their Relationship to Other People of the Middle East." Article in Nineveh Magazine, No. 1 & 2. Berkeley 2000, pp 3 & 4

[15] Delawer Khan. The PEOPLING OF ANATOLIA OVER THE PAST 2000 YEARS. Accessed 1/20/2025. https://eurasiandna.com/the-peopling-of-anatolia-post-over-the-past-2000-years/

[16] Iosif Lazaridis, Songül Alpaslan-Roodenberg et al. The genetic history of the Southern Arc: A bridge between West Asia and Europe. Accessed 1/20/2025. https://reich.hms.harvard.edu/sites/reich.hms.harvard.edu/files/inline-files/8_25_2022_Manuscript1_ChalcolithicBronzeAge.pdf

[17] Accessed 2/18/2025. https://eurasiandna.com/post-iron-age-introduction-of-y-dna-r1a-r-z94-and-east-asian-ancestry-into-kurdistan-north-iran-and-turkey-with-the-parthians-and-scythians/



All this aligns with many historical and archeological facts that show that the people known as Kurds are not native to Mesopotamia. The Kurds, as Iranic people, were Central Asian tribes who migrated to the Zagros Mountains around Lake Urmia and Van regions in Western Iran and Eastern Turkiye from Khorasan and former Sogdiana region where they acquire several admixture during these migrations. From there the modern Kurds continued to infiltrate slowly into Mesopotamia much later, perhaps post the rise of Islam in the 7th Century. This also is attested by many historical records of the appearance of Kurds in the north Mesopotamia scene after they converted to Islam.

Data Manipulation

Recent presentations of DNA ancestry graphs that reflect the Kurds as ancient people who have originated from Mesopotamia have flooded social media outlets. However, we know that the Kurds are **nomads who migrated west from Central Asia and settled in the Zagros Mountains region of western Iran. Prof. Asatrian writes that these nomads were known as Kurt (Kwrt- and plural Kurtan) meaning tent-dweller nomads in the Middle Persian treatise compiled presumably in the second half of the 6th century A.D.**[18] These nomads have become more diluted on their migration route as they mixed with and absorbed other tribes along the way.

[18] Garnik Asatrian. "Prolegomena to the Study of the Kurds", Iran and the Caucasus Vol 13, No. 1. Yerevan State University. Brill, 2009. P. 23

The Iraqi Kurds who are part of the federal Kurdish region in northern Iraq are working closely with other Kurdish nationalists and historians to rewrite the Kurdish history. Kurdish historians began claiming that the ancient Sumerians (and other Mesopotamians) were Kurds. They initiated the process of corrupting the Assyrian history and are using these designed DNA ancestry data to support their claims.

When people apply for a DNA test, they are requested to complete a questionnaire, which includes among other questions, the following:

1. Where they live today,
2. What is their ethnicity.

Thus, with every new application a Kurd from northern Mesopotamia submits, the answer that he/she lives in northern Iraq, southeast Turkiye and northeast Syria and that he or she is ethnically a Kurd is added to the DNA database of that specific ancestry company and the results will soon link these findings together. The Kurds are initiating DNA studies, registering as being from Mesopotamia and making a database in the process with the ancestry companies already. The more Kurds request DNA reports and state that they are from northern Iraq for example, the Kurdish Mesopotamia match will get stronger with time. As more Kurds respond to those two questions, the data base becomes heavily based on the information these modern Kurds provide; **however, this is not completely reflective of where the Kurds came from originally as mentioned earlier**, since many tribes of the Yaz, Margiana (non-Indo Europeans), Bactria and Sogdia cultures mixed with descendants of the Andronova Steppe Nomads migrated from Central Asia and settled in and around the Zagros Mountains and on their migration path acquired many other admixtures. Some argue that the Kurds are Indo-Europeans, but we must understand that speaking a language that is classified as Indo-European does not make those speaking it Europeans, because the Indo-European language family does not reflect ethnicity or ancestry.[19] At the same token, ethnicity and geography aren't the same thing. The grandfather of a modern Kurd could be living in northern Iraq today, but that does not make him an ancient inhabitant of northern Mesopotamia.

Historical documents tell us that the term Kurd had a rather indiscriminate use in the early medieval Arabo-Persian historiography and literature, with an explicit social connotation, meaning “nomad, tent-dweller, shepherd”.[20] The term Kurt (Kwrt-) in time developed into Kurd. This term never reflected a precise ethnic belonging, rather reflected all the people who lived nomadic life in the mountainous region of western Iran which extended to southern historic Armenia.

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[19] The Indo-European relate to the family of languages spoken over the greater part of Europe and Asia as far as northern India; therefore, many different ethnic groups speak a language that is part of this family of languages.

[20] Garnik Asatrian. Prolegomena to The Study of Kurds. Accessed 1/27/2025. https://www.academia.edu/8625114/GARNIK_ASATRIAN_PROLEGOMENA_TO_THE_STUDY_OF_THE_KURDS

Now, a Kurd, for example, living for five generations in northern Iraq, could inherit a few genes from his ancestors who lived in the Zagros Mountains, because DNA is inherited in "chunks" that break up the further back in time people go. People start with two parents, then four grandparents, then eight great-grandparents, it goes to sixteen, thirty-two and so on. And by the time people go certain generations back, there are ancestors from whom one might inherit no DNA.

However, not all DNA data could analyze the history of migration of people. This is troubling, because **it is more important to know where people originated from than where they are settling today**. When a person sends his spit off in a little tube, it is specific markers in that person's genome that are being analyzed, and then compared to the markers of others who are good representatives for distinct regions or ethnicities around the world. But the companies are only looking at very recent samples, from a relatively small group, in one specific database. **These tests do not tell us where our ancestors lived in the past.**

In addition to migration, invasions by foreign groups could, yes not always, change the demography of a region. Human beings inherit half of their DNA from their mothers and half from their fathers. However, it is very possible that **a Kurd for example may not pass on to his children all the genes that he inherited from, for example, a possible Assyrian side of his family**. Remember, in the 19th Century and during the great Kurdish massacres of Assyrians in the Hakkari region of modern Turkiye (1843-1847), of Yezidis (1832 & 1844) and of Armenians and Assyrians (1894/95), many young Assyrian, Yezidi, and Armenian boys were kidnapped and raised as slaves to Kurdish tribal leaders. Those boys grow up as Muslims and were Kurdified. Many young girls from the above groups were abducted by Kurdish tribes, forced into marriage with Kurds and with time Kurdified as well. Thus, certain Kurdish DNA would reflect similarities with Assyrian ancestry and northern Mesopotamia origination.

Many groups have been embarking on studies to support the narrative that presents them as a homogenous people and a nation. One such study undertaken by Sirwan Akbar from the University of Huddersfield indicated that the results obtained in his study showed that the Kurdish-origin volunteers from various Kurdish regions had a high degree of genetic similarity, indicating a common genetic ancestry. However, Akbar admitted that the study may not represent the genetic diversity of the entire population of Kurds throughout the Kurdish regions. Akbar also indicated that various factors such as migration, historical events, and genetic drift can influence genetic ancestry, which is not a simple topic as it is presented. Akbar also indicated that the Kurds could be presented as multiethnic due to admixture with other groups, and this is due to more recent migrations or genetic exchanges (intermarriages) between the people in various regions and Kurds. Also, ten major haplogroups (Hg) of the Y-chromosome Kurdish gene pool were determined, which indicates a diverse genetic background. Among these haplogroups, J, R (R1b), G, and E were considered the most common. However, **Akbar admits that the results of his study are not totally significant and do not totally represent all Kurds; because of the limited sample size, they are considered a beginning for further**

research.[21] Akbar's project is clearly a politically motivated study and not scientific. **Akbar admitted that migration, historical events and other factors influenced his study**, yet, he did not attempt to explain the history of the Kurds in northeast Syria, for example, which dates back to World War I.[22]

Kurdish writers claim that Kurdish haplogroup data substantiate their ancestry and Mesopotamian origin. In the haplogroup context, 23andme explains that haplotype refers either to the DNA sequence of one's mitochondrial DNA, which is inherited from one's mother, or to the DNA sequence of one's Y chromosome, which is passed from fathers to their sons. Due to their unusual pattern of inheritance, the mitochondrial DNA and the Y chromosome contain information about our maternal and paternal lines, respectively. **But together, they make up less than one percent of all our DNA, and only represent a small fraction of our ancestry.** It is for this reason that while haplogroup data could identify genetic lineage and early migration routes of human beings; the lack of sufficient samples from remains of older generations and ancient people make that a real challenge.

These are not the only issues involved. Scientists have argued that identical twins must have virtually identical DNA. If so, why do DNA samples sent from twins for genetic ancestry testing failed to indicate exact same results. These results demonstrated that twins don't often get the same results from different ancestry companies. In one instance, the consumer genetics company 23andMe told one twin she was thirteen percent "Broadly European." The other twin's test, meanwhile, showed she had just three percent "Broadly European" ancestry, and had more DNA matched to other, more specific regions in Europe. What's more, when the twins had their DNA tested by five companies, **each company gave them different results for the twins**.

Limitations

Also across the DNA industry, estimates of where an individual's ancestors lived can differ significantly from one company to another. Overall, discrepancies in ancestry testing don't mean that genetic science is a fraud, and that the companies are just making up these numbers. **They have more to do with the limitations of the science and some key assumptions companies make when analyzing DNA for ancestry**.

There are about three billion base pairs that make up the human genome. When a person spits into a tube and sends it off to a company they don't look at every single letter. Humans have over ninety-nine percent of their DNA in common. So instead, to speed up

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[21] Sirwan Akbar. The Genetic Diversity and Ancestry of a Small Sample from Greater Kurdistan: Insights from DNA Sequencing Results. The Journal of the University of Duhok 26(2):403-421. September 2023. Accessed 2/7/2025. https://www.researchgate.net/publication/376970905_The_Genetic_Diversity_And_Ancestry_of_A_Small_Sample_from_Greater_Kurdistan_Insights_from_Dna_Sequencing_Results

[22] Read about the Kurds movement from southeast Turkiye across the borders into the newly built Assyrian city of Beth Zalin (Qamishli) as the Assyrians escaped WWI genocide. Read also about the 1925 rebellion of Sheikh Said in southern Turkiye, how it was crushed by the Turkish Army and how thousands of Kurds escaped across the borders into the French mandated region of Syria where they were welcomed by the French authorities.

the process, the tests look out for the locations on the genome where people commonly vary from one another. **This makes the remaining 1 percent very critical and open to discrepancy**.

When a genetic testing company gets in the mail saliva stored in a tube, it first has to extract the DNA from it by removing the cell debris, proteins, all of the things that are not DNA. Then they make copies of the DNA and finally break those stands up into shorter chunks. The chunks are then fed into a machine called a genotyping array which sorts for the Single Nucleotide Polymorphisms or "SNPs". They'll tell the companies which versions of SNPs you've inherited, and at what location in the genome. Many SNPs are meaningless when it comes to our health. But they can be useful starting points for tracing ancestry. That's because, like everything else in the human being's genome, SNPs are passed down through the generations. SNPs, which means a variation in a single nucleotide (building block) of DNA at a specific location in the genome, representing the most common type of genetic variation between individuals within a population; essentially, a single "letter" change in the DNA sequence that can potentially affect traits or disease susceptibility. The more SNPs we share in common with another person, the more likely we share a similar, and more recent, ancestry. Our ancestry is estimated by comparing our SNP results with a genetic database of people with known ancestries.

Here's the first source of potential discrepancies in ancestry testing: Even though these genotyping arrays are extremely precise; they are prone to making tiny errors. We're talking about 99.9 percent accuracy for these arrays, **but even with that high level of accuracy, when we process one million places in the genome, we might get 1,000 errors**. Those small errors alone can help explain why one twin might have slightly different results from another. Errors aside, the genotyping we get from each of the consumer testing companies should be just about identical to one another. **But how companies analyze that raw data varies. And that's why one company's ancestry results might look a bit different from another's**. 23andMe, Ancestry.com, and MyHeritage compare the SNPs sets to known reference groups. The tests are looking for evidence that there are common ancestors with people in the reference group. However, the reference group of each company uses can be different. **Furthermore, these reference groups are changing all the time**.

Ancestry DNA companies can often track down European DNA to specific countries. But if you're a minority, your report might be vaguer. Only a few years ago, 23andMe could only match people to just three broad regions in sub-Saharan Africa, for example, which is an enormous area with a lot of geographic and ethnic diversity. That is because there aren't as many African people in these company's **reference data sets**. Imagine a few Assyrians from a small town in northern Iraq (historic Assyria). If the testing companies have a bunch of people from that small town, they can match those few against them effectively. However, if they don't have people from that specific small town to create a reference group, they might just determine that those few Assyrians are broadly Iraqi or Middle Eastern. **Furthermore, the programs used for ancestry have to make some guesses about how far back in time our ancestors lived in a particular place**. This

also is imperfect. The computer programs are also sensitive to the small errors built into the genotyping process. And, again, the program's output depends on the reference DNA the company has in its database. **An important problem is the fact of bias; DNA results are based on the existing data, so they're biased based on how much data represents each population.**

Ancestry DNA tests don't tell you where each member on your family tree lived. Instead, they tell you how much of their DNA you've inherited. That's why **siblings can get different reports from DNA ancestry services** (even though they share the exact same relatives). As we move further and further back in time in our family tree, there's some possibility that we have inherited no DNA from one of our ancestors. Does that mean we are not related to that person? Of course not. They're still a part of our family tree, and a part of our heritage. But, DNA is not the same as heritage. DNA ancestry tests and sort your DNA by the geographic regions you likely inherited it from. But not everything about our family histories is geographic. Also, These tests don't tell us about the languages our ancestors spoke, the food people ate, or whether they were celebrated or persecuted. **They don't say much about how our ancestors lived or traveled**.

Moreover, the exact percentages of where our DNA comes from may not matter either. If my siblings inherit slightly more Assyrian DNA than me, does that make them more Assyrian? For these reasons, many are uncomfortable with the idea of heritage as something that needs to be corroborated with DNA evidence — or that people belong to a certain ethnic group based on a trivial amount of ancestry.[23] We absolutely shouldn't look strictly at DNA as a measure of identity.

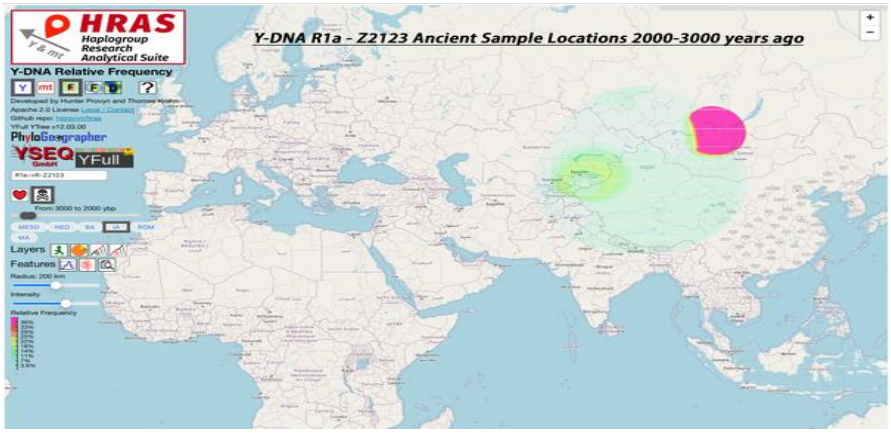
23andMe reported that in 2018, they updated the Ancestry Composition Report to include new regions around the world. Country Matches provide information about a person's more recent ancestry, giving the people insight into countries and administrative regions within those countries where people's ancestors likely lived. In 2020, the company introduced Genetic Groups — which provide more information about where the ancestors of a person may have lived, what ethnic groups they may have identified with, or what languages they may have spoken. 23andMe data indicated that Armenians, Assyrians, Kartvelians and Persians, the diverse people of Iran, the Caucasus, Eastern Anatolia, and Mesopotamia share an ancient genetic history dating back to some of the world's first farmers.[24]

The Kurds continue to conduct isolated DNA studies in an attempt to prove that they originated from Mesopotamia. Their politicians and nationalists have made claims that they were Medes. They cling to this claim too because the Medes have collaborated with the Babylonians to defeat the Assyrian Empire. However, that claim was unsubstantiated as well because only a few authentic Median words were documented; therefore, too few for any sweeping assumption to concretely substantiate that a connection between Kurds

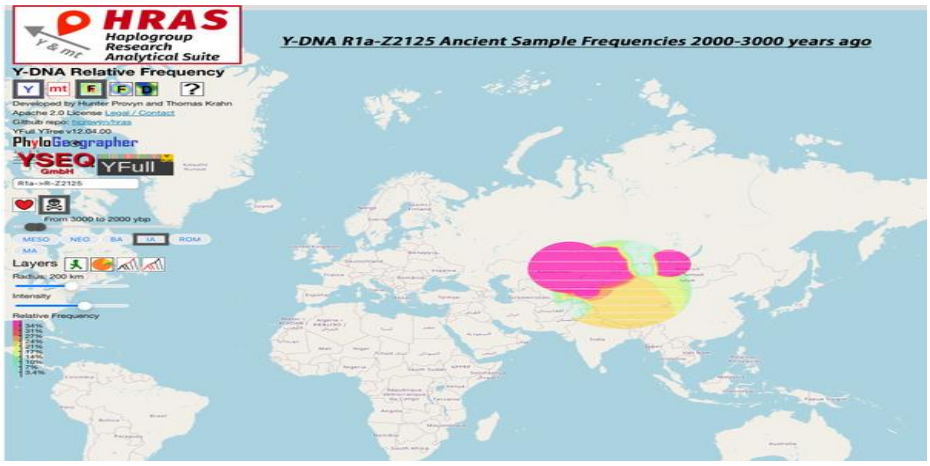
[23] For further reading, see James D. Watson & Andrew Berry. DNA: The Secret of Life. Alfred Knopf, New York, 2003.
[24] See 23andMe Website.

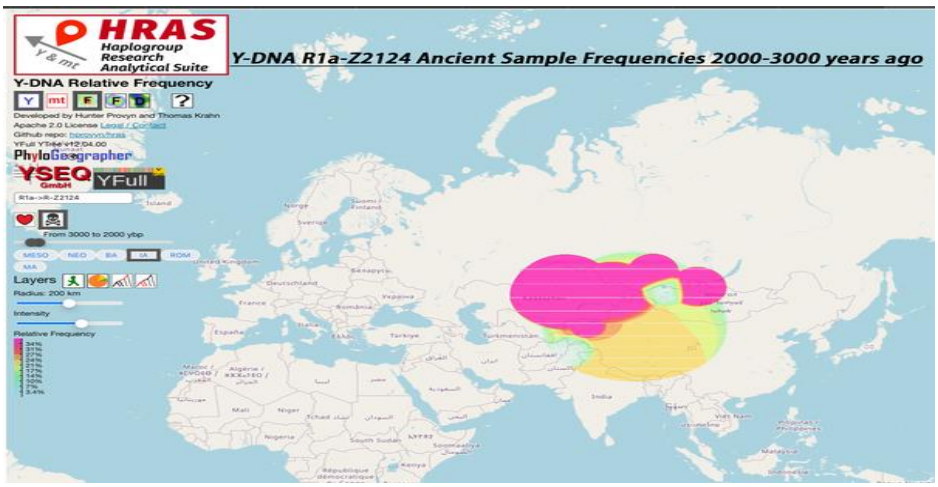
and Medes existed.[25] When the Kurdish Republic of Mahabad in Western Iran was crushed by the Iranian Army in December 1946 after only eleven months in existence and the Kurdish leaders were either hanged, imprisoned or escaped, the Kurds ended up in northern Iraq and started their movement there in 1961. Today, as the Kurds have established the KRI, they are desperate to establish a new history to link them to northern Mesopotamia. The Kurdish nationalists and historians have also claimed that they were Hurrians, Mitanni, Hittites, Amorites, Akkadians, and more recently Sumerians[26] in order to link them to Mesopotamia since all the above people were associated with Mesopotamia at one time or another.

Finally, and as stated before, **the biggest problem yet in all this is the fact that ancestry DNA tests on their own are not capable in determining where exactly people came from and/or when they did so. DNA companies do not have enough samples from ancient DNA (aDNA) from geographically and temporally representative regions to use as the database for good and reliable comparison.** Interestingly, new DNA data has shown that 2000–3000 years ago there was no R1a-Z93/Z94/Z95 male lineage DNA in the areas presently occupied by Kurds, who have the highest frequency of these R1a male lineages. So if those R1a Kurd ancestors didn't even exist in the Middle East 2000–3000 years ago this proves that those Kurd male ancestors must have come from outside the Middle East or West Asia. See below data:



[25] Ferdinand Hennenbichler. The History of Kurds. Edition Winterwork (Printshop). Germany. 2011
[26] Fred Aprim. Kurds and Kurdish Language Not Related to Sumerians. Accessed 1/27/2025. https://www.academia.edu/118502324/Kurds_and_Kurdish_Language_Not_Related_to_Sumerians_A_Response_to_Soran_Hamarash





Finally, we must understand that DNA relies on statistics. Ancestry companies have been testing hundreds of thousands of people from various regions around the world and the data were organized in a DNA database. As new people submit their DNA samples to these companies, the results are compared and analyzed against this vast database and based on common data, a person's ancestry is decided. Thus, statistics make a great factor in the computer programs used in ancestry studies. The Kurds, for example, have flooded Social Media with DNA data about their ancestry; however, statistics could be very misleading when we do not have a set of large data points. We cannot make definite judgment about ancestry based on one hundred or one thousand samples from a population claimed to exceed thirty million. A DNA study based on one thousand sample applicants makes less than 0.005 percent of the population or even ten-thousand samples would make less than 0.05 percent of the Kurdish population. We know that increasing the sample size can help minimize the probability of errors and increase the level of confidence. A larger sample size provides more statistical power and reduce the likelihood of false signals. Also, these samples must be collected from Iran, Armenia, southeast Turkiye, northern Iraq and northern Syria to be inclusive samples and not samples from a few selected or preferred regions.

Conclusion

While DNA studies offer insights into certain aspects of ancestry, they lack the precision and depth needed to define ethnic and historical identities. DNA results are influenced by statistical trends and can be easily skewed by modern demographic data, rather than tracing the complex histories of migration, cultural evolution, and assimilation. Ethnic identities are deeply rooted in historical documents, linguistic continuities, cultural traditions, and archaeological findings—elements that DNA tests alone cannot account for. Most importantly, the attempts to strictly link any genetic claims to land is scientifically a fantasy, particularly when historical facts and archeological findings are not considered.

To rely exclusively on genetic results risks oversimplifying and misinterpreting rich and intricate human histories. Ethnic identity and historical claims should remain grounded in multidisciplinary evidence that acknowledges the full context of human civilization and lineage. The Kurdish ancestry case based on the Mesopotamian origin of the Kurds, presented by mainly Kurdish nationalists and few sympathetic, is not only weak, but completely false, because ample of historical references have shown that the homeland of the Kurds is the Zagros Mountain region of western Iran.

We cannot draw clear and definite conclusions about ancestry from small DNA data collected from a specific region. The Kurds were and are a tribal society that never formed a homogeneous group of people, like most of the groups around the world. History teaches us that. The persistence of tribalism, rivalries and the 18th Century battles between the various Kurdish emirates or principalities, e.g. in Bahdinan, Bohtan and Soran, were fundamental obstacles to the emergence of a Kurdish sense of unity across tribes or emirates.[27] This continued. The Barzani and Talabani tribes emerged from the womb of these principalities that were in constant conflict, and the Kurdish civil war between Barzani and Talabani in 1994-1997 was only a continuation.

Also, many people and tribes that have been categorized as Kurds in the last few decades since the Kurdish nationalism blossomed, were not ethnically Kurdish originally, but Kurdified people, including Armenians, Assyrians, Yezidis, Zazas, Luri and many others in the region, which were the outcome of raids and massacres against these indigenous people. This explains why the Kurds have different cultural traits and languages such as Kurmanji, Sorani, Zazaki, etc. While these languages have been presented as dialects; however, according to many reputable linguists and historians, they are separate languages, because of their lack of mutual intelligibility,[28] though closely related just as farsi (Persian) is related to them as well.

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[27] Review by Martin van Bruinessen, Utrecht University, The Netherlands, p. 211. Michael M. Gunter (ed.), Routledge Handbook on the Kurds, London and New York: Routledge, 2019.

[28] Garnik Asatrian. "Prolegomena to the Study of the Kurds", Iran and the Caucasus Vol 13, No. 1. Yerevan State University. Brill, 2009